



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,224	12/20/2001	Takashi Katsumata	11-076	4216
23400	7590	09/09/2004	EXAMINER	
POSZ & BETHARDS, PLC 11250 ROGER BACON DRIVE SUITE 10 RESTON, VA 20190			HANLEY, JOHN C	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/022,224	Applicant(s) KATSUMATA ET AL.	
	Examiner John C Hanley	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☒ Claim(s) 1,7,17 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2856

DETAILED ACTION

Claim Objections

1. Claims 1, 7, 17 and 20 are objected to because of the following informalities: the term "grooves" is not an accurate label for the subject matter claimed, and the use of the language drive signal instead of driving force or electrostatic force is objectionable. Groove implies that a material is not cut all the way through, which is not in agreement with the disclosure, and the movable portion could not move with respect to the fixed portion if not cut all the way through.
2. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Regarding claims 19, 22 and 25, "bar shape" is vague and indefinite as to what shape a bar infers.
6. Regarding claims 1, 7, 20 and 23, it is unclear what "capacitive variation" the monitor electrode, the output electrode, and/or the detection means detect.
7. Further regarding claims 1-25, there are numerous recitations of a wire being connected to an "external circuit substrate." It is unclear if this substrate is a part of the invention. Further, a wire connected to the substrate, as opposed to circuitry on the substrate, is unclear as to what limitations are intended. The various functions that these wire perform

Art Unit: 2856

cannot be structurally accomplished by connecting all these wires to a substrate.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-4, 6, 13, 14, and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (US 5,969,225) in view of Itoh (US 6,119,518).

10. Kobayashi, Figure 8, shows a semiconductor device for sensing angular frequency having a fixed substrate formed of, for example, a high resistance silicon material (insulation), the substrate being formed in a rectangular shape. Also included is a movable portion supported for movement in an x direction by application of a capacitance driving means (input means), and a detection means for detecting capacitive variation (output means) in a y direction caused by driving the movable portion by the input means. The input and output electrodes associated with the input and output means, respectively, are arranged on different sides of the rectangular shape. The bar shaped beams 4 and 5 of Kobayashi collectively serve as both driving beams and detection beams, and these beams can also be U-shaped as shown by beams 25 in Figure 1 of Kobayashi. In column 4, lines 11+, Kobayashi specifically recognizes the problem of parasitic capacitance causing leakage

Art Unit: 2856

of drive signals into the detecting means, and specifically motivates one to reduce the leakage. Other than the lack of specific teachings of electrode leads and a circuit substrate inherently required and obvious to complete the device for its intended use, Kobayashi lacks a specific teaching of shielding means to reduce cross talk. Electrostatic shielding is a well-known engineering solution to the problem of capacitive coupling. However, Itoh specifically teaches to use grounded shields (i.e., constant potential) for electrostatically isolating the driving terminals and the detecting terminals of an angular velocity sensor. It would have been obvious to one skilled in the art at the time of applicant's invention to reduce capacitive coupling between the input and output of Kobayashi by the use of grounded electrostatic shields as taught in Itoh, since Kobayashi recognizes the need to reduce the problem in such a sensor layout, and Itoh also recognizes the same problem and offers an alternative solution. The physical placement of the shield near any one of the electrodes to be shielded would have been obvious to anyone skilled in the art of shielding, so long as the shield is placed between the circuits to be shielded from one another. The "predetermined" distances and spacings recited in new claims 14 and 16 would be inherently obvious in the placement of a shield between two elements to shield them from one another. A conductive pad on the substrate is an obviously convenient method of either providing a conductor between the elements to be shielded, and/or to secure a shield wire in such a position. An electrostatic shield, by definition, must be physically positioned between circuits to be shielded from one another. Itoh's shield lines are between the circuits to be shielded from one another. Further, Itoh, at the bottom of column 1, discusses use of an earth plate in the prior art for isolating the

Art Unit: 2856

driving terminals. The plate is arranged between the wiring lines of the individual terminals.

11. Applicant's remarks have been read and considered, but are unpersuasive. Applicant's primary remarks appear to center on a planar orientation of the moving member, the fixed member, and the driving and detection beams being in the same plane. However, the examiner can only interpret Kobayashi as having the same geometric arrangement, as clearly depicted in Figure 7. Applicant apparently chooses to interpret substrate 2 of Kobayashi as the fixed portion instead of the fixed elements such as 10A, 9B, etc., of Figure 7 that the Examiner reads on this language.

12. Claims 5, 7-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Itoh as applied to claims 1-4, 6 and 13, above, and further in view of Ward (US 6,445,195). The combination of Kobayashi in view of Itoh lacks a teaching of monitor and dummy electrodes. Ward teaches the use of pick-off electrodes (monitor electrodes) to feedback positional information of the movable portion to correct and control the drive means. Ward further recognizes the problem of signal coupling between the drive electrodes and both the monitor and detector electrodes. Ward further teaches to detect drive feed through via a sensor and nulling the measured components by adjusting the amplitude of the drive signal(s). Ward specifically teaches to use a trace source (column 7, lines 32+ to provide signal(s) used to null errors in the drive circuit. This appears to be what applicant does in figure 5 of the drawings, where the signal from dummy electrode element 80 is fed back to subtractor 99. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to provide monitor electrodes to the device of Kobayashi, as combined with Itoh, to better control the driving means of Kobayashi, as taught in Ward. In view

Art Unit: 2856

of the fact that the monitor electrodes are recognized by Ward as having drive feed through problems along with the detector electrodes, it would have been further obvious in view of Itoh to shield the monitor electrodes from the drive electrodes as well. It would have been further obvious in view of Ward to use means for sensing the drive feed through to obtain a signal to null the feed through in the drive electronics. The "predetermined" distances and spacings recited in new claim 15 would be inherently obvious in the placement of a shield between two elements to shield them from one another, as set forth in the previous rejection, above.

13. Applicant's remarks have been read and considered, but are unpersuasive. Applicant's position that Ward and Itou are non-analogous art is unsupportable as both are directed to similar measurement systems. Regarding new claims 17-25, the new the bar- and u-shaped beam limitations were covered by the Examiner in paragraph 10, above.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C Hanley whose telephone number is 571-272-2195. The examiner can normally be reached on M-F 9AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2856

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCH



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800